



Pest management combines pest control approaches, building them into a management system. It adjusts to the interactions between a group of pests, the cropping system of the area, and the wider surrounding environment.

The concept comes from the realization that any disruption of a pest, be it insect, mite, nematode, plant disease, or weed, will tend to affect the status of other pests in the crop complex. Pest management attempts to develop and use techniques to control pests, not to eradicate them. In the production of food and fiber, man has learned that more balanced cropping systems with greater diversity tend to undergo fewer violent outbreaks of pest species. For this reason it has been easier to develop management systems in fairly stable environments, such as tree fruits, forests, or alfalfa, than in annual crops which consist of more disrupted environments.

PEST MANAGEMENT PROJECTS

Washington State has two pest management projects, one in tree fruits and a second in alfalfa seed production. These federal extension-sponsored programs are part of a national system that is supported through many sources, including the Animal and Plant Health Inspection Service of USDA. There are projects in most of the 50 states involving practically all major crops.

Where pest management techniques are well developed and adequate management advice is available, the projects are called action

programs. Where techniques are still being developed, the projects are called pilot programs. The two in Washington are action programs. In all of these programs there is extensive support from state and USDA research investigators as well as from other state agencies and grower groups.

Most projects have begun by concentrating on major pests in a crop. Other pests have been included as more is learned about pest-crop system interactions. Thus, for Washington tree fruits, efforts have concentrated on mites, codling moth, Oriental fruit moth, pear psylla, and fire blight. Programs are being developed for peach twig borer. Several types of aphids are being observed. Future needs call for a knowledge of how cover crop and weed complexes affect lygus and other bugs, cutworms, and plant diseases, as well as beneficial insects.

In alfalfa seed pest management, the main concern has been to protect and encourage two species of pollinating bees, and to control lygus, two-spotted mites, and aphids. Techniques are being developed for better pollinator bee management and alfalfa weevil control. Future needs include improved control of nematodes, diseases, and weeds. This is particularly desirable where weeds exert deleterious effects upon the pollinator or insect pest management programs.

ADVANTAGES OF PEST MANAGEMENT

What advantages does pest management have over the application of pesticide chemicals on

a routine schedule? First, experience shows that excessive use of pesticides has led to resistance in many insects, mites, nematodes, weeds, and disease organisms. We must employ pesticides more carefully and sparingly to extend the usefulness of compounds. Second, reduced pesticide usage lowers production costs for growers in terms of materials, equipment wear, and labor. A third factor, most pesticides are petroleum-based chemicals, a fossil resource in diminishing supply. Finally, and very importantly, many pesticides are toxic on either a short- or long-term basis to a variety of organisms that contribute to man's pleasure in his environment—such as birds and game fish. We should use pesticides only when necessary and they must be applied correctly.

TECHNIQUES USED

What techniques are used in pest management? One important concept is that of economic injury—determining that level at which pests may cause damage serious enough to pay for the costs of control. The pest manager must also understand pest life cycles so that controls can be applied during the pest's most vulnerable stages. Another essential part of pest management programs is good pest population measuring techniques, such as the use of sex-attractant traps, sweep nets, leaf counts for mites, fungus spore counts, nematode cyst counts, and indices of weed populations. Further good management practices will reduce the reservoir of pest species through sanitation by destroying plant parts containing disease organisms or insects; and watering that provides adequate plant growth but is not excessive enough to encourage diseases. Another technique is the use of plant varieties resistant to pest attack. Other methods are encouragement and release of organisms causing diseases of pests, or those that parasitize or consume them. Many

techniques are known or are in promising stages of development at present; the trick is to educate growers and pest control consultants so that they can incorporate these into interdependent management systems.

ADOPTING A NEW CONCEPT

Since the objectives of pest management seem worthwhile and logical, why doesn't everyone adopt this concept immediately? Part of the problem is natural resistance to change, particularly if rather successful systems are already practiced. To change requires the acceptance of new knowledge, and it is simply easier to apply pesticides on a regular schedule than to evaluate the problem continuously.

Another factor involves reduced pesticide sales potential for field pest control advisers with agrichemical companies. They are generally in more frequent contact with their clientele than are Extension agents and other public service personnel. Many chemical company pest control advisers have a wealth of experience in pest control procedures. Their knowledge and experience would be, and often is, a real asset to pest management programs, particularly when they learn and promote pest management techniques. Their company management hopefully will develop means of charging for this service to compensate for reduced chemical sales, to the benefit of growers, our environment, and our increasingly scarce resources.

Pest management combines rather complex pest control techniques to provide fairly obvious advantages to society. It does not necessarily reduce pesticide applications, rather in some instances it merely results in more logical use of pesticides. A strategic application of pesticide can dramatically improve market grade and thus greatly benefit grower returns. However, we believe that the

cost of pesticide applications can be reduced significantly on apples, peaches, and perhaps other tree fruits.

Pest management programs under development in Washington are designed to test and promote these improved concepts—their objectives are to get growers, whenever possible, to use pest management and to

abandon routine applications of pesticides. It is not an objective of Washington's pest management projects to displace existing pest control consultants. Rather, we intend to encourage consultants to improve existing practices and to more fully adopt pest management, thus providing better service to growers and to society.

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